ICT for Disaster Management

Group - 5

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INTRODUCTION

❏ Disaster - Impact of Natural or man-made hazards that causes human suffering.
❏ Disaster management is an essential component of development framework that is often treated in whole, rather than as a considering multiple different issues.
❏ Proper disaster management - Key requirement towards achieving the Millennium Development Goals.
❏ There are different phases involved in Disaster Management in which every phase involves usage if ICT .

Disaster management cycle

- ❏ Mitigation
- ❏ Risk Reduction
- ❏ Prevention
- ❏ Preparedness
- ❏ Response
- ❏ Recovery

ICT FOR DISASTER RISK REDUCTION

❏ Information and Communication Technology (ICT) systems play a crucial role
❏ Online Inventory of Emergency Resources
❏ The IDRN (India Disaster Resource Network – www.idrn.gov.in)
❏ ICTs have been used to deliver DRM training and education online.
❏ Youth In Action - Play the Stop Disasters! Game

Channels Used for Disaster Warning

❖ Radio and Television
  ➢ Spreads a warning quickly to a broad population

❖ Telephone (Fixed and Mobile)
  ➢ Telephone trees

❖ Short Message Service
  ➢ SMS works on a different band and can be sent or received even when phone lines are congested.
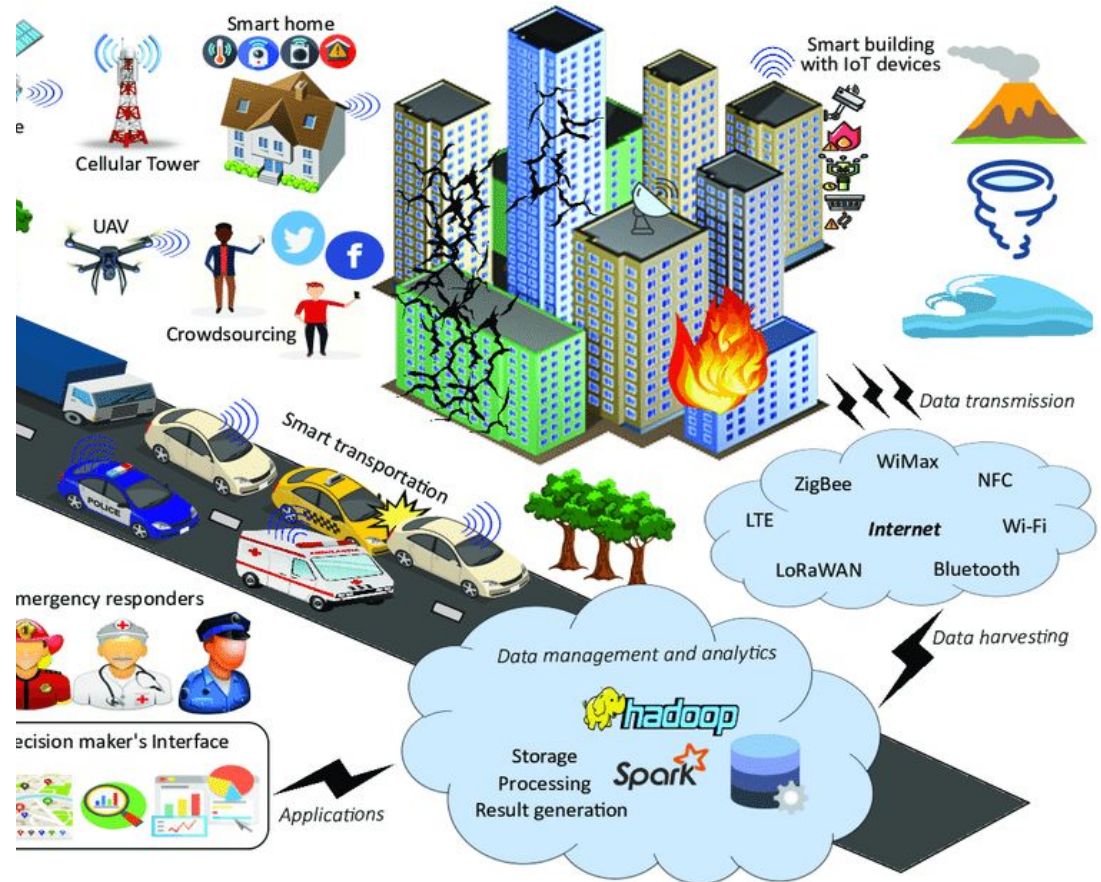
❖ Cell Broadcasting
- ❖ Public delivery
- ❖ Disaster management

❖ Satellite Radio
- ❖ IRS Series
- ❖ Disaster Management Support

❖ Internet(IoT)
- ❖ Monitoring Activity
- ❖ Planning for the Future

❖ Amateur Radio

➢ Amateur Radio is a scientific activity popularly known as "Ham Radio".

➢ Amateur radio operators use two way radio stations and communicate with others similarly authorized using various modes of communication like voice, Morse code, computers, internet etc.

➢ The things that amateur radio operators do with their radios are as diverse as the people themselves. The advanced amateur radio communication techniques include Automatic Position Reporting Systems using GPS information, Internet linking of Repeater stations, Interface with internet for exchange of emails, images etc as well as visual communication modes.

❖ Community Radio

➢ A community radio station is one that is operated in the community, for the community, about the community and by the community. The community can be territorial or geographical - a township, village, district or island. It can also be a group of people with common interests, who are not necessarily living in one defined territory.

➢ community radio can be managed or controlled by one group, by combined groups, or of people such as women, children, farmers, fisher folk, ethnic groups, or senior citizens.

➢ What distinguishes community radio from other media is the high level of people's participation, both in management and program production aspects.

Geographical Information System (GIS)

➢ A geographic information system (GIS) is a computer system for capturing, storing, checking, and displaying data related to positions on Earth's surface.

➢ By relating seemingly unrelated data, GIS can help individuals and organizations better understand spatial patterns and relationships.
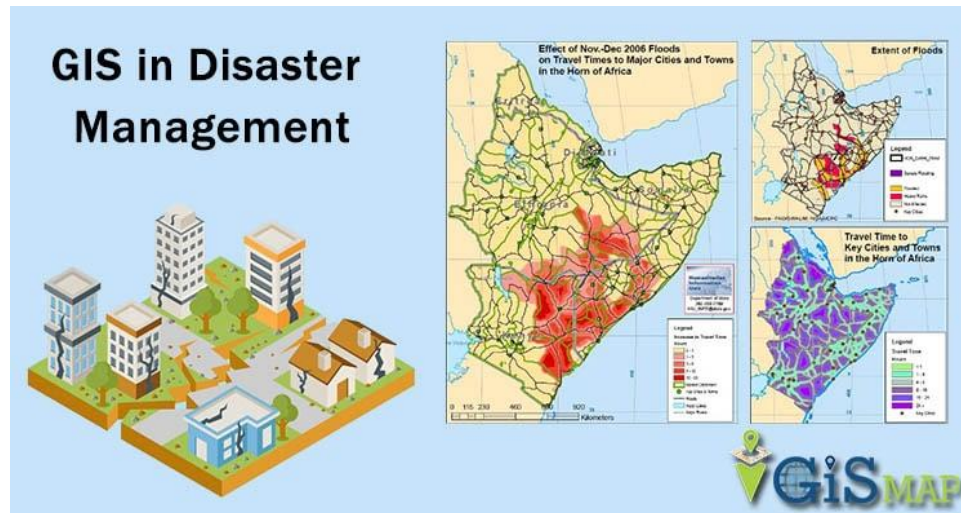
GIS and Disaster Management Cycle

Planning

- ❖ GIS is useful in helping with forward planning. It provides the framework for planners and disaster managers to view spatial data by way of Computer based maps.

Mitigation

- ❖ The Use of GIS in disaster management can help with structural and non-structural mitigation

- ❖ GIS Allows you to spatially represent areas at risk and the level of risk associated with a particular hazard, which can be a guide in decision making,

- ❖ It will facilitate the implementation of necessary mechanisms to lessen the impact of a potential emergency.

- ❖ With Gis, disaster managers are in a better position to determine level of mitigative structures that should be in place given the vulnerability of an area or population.

Preparedness

❖ GIS can help with the identification and location of resources and " at risk" areas.

❖ It establishes a link between partners and critical agencies, which allow disaster managers to know where relevant partner agencies are stationed

❖ GIS maps can provide information on the human resources present in an Emergency Operation Center as well as on the ground personnel such as security, health providers and other key responders.

❖ This is particularly useful since the technology can help with strategic placement of emergency personnel where it matters most.

❖ GIS helps to answer the Question of who is to be based where and at what phase during emergency

❖ It can help to determine whether or not reload infrastructure and communications networks are capable of handling the effects of disaster and, if necessary, guide in the placement of resources.

ICT FOR DISASTER RESPONSE

The Indian Ocean Tsunami (2004) - Sahana Disaster Management System

Primary responses post a disaster:

- Tracing *missing people*
  - *Missing Person Registry* : An e-Bulletin board of the missing/found.

- Coordinating *Donor Groups*
  - *e-Organization Registry* : effectively track who is doing what, where, when.
  - Gauge whether there are areas in which services are not adequate.

- Recording Locations of *temporary shelters/camps*
  - An application to keep track of location of affected areas and camps.

Donor Groups: NGOs, Community Groups or any other which is reaching out to provide assistance. Could be in terms of food/items of need during time of disaster.

ICT FOR DISASTER RESPONSE (contd.)

Turkey Earthquake (1999) - Internet to the Rescue

Problems & Solutions:

- Telecommunications infrastructure was extensively damaged.
- Mobile phone networks operating with reduced bandwidth.
- Internet was the only possible medium that could connect the affected areas to the outside world.
- Internet was also used to provide information regarding the whereabouts of missing family members. For example, many organizations formed 'message lines', which acted as a database of people found, their condition or the degree of damage to the region in which relatives lived.

ICT FOR DISASTER RECOVERY

❏ Recovery refers to "**decisions and actions** taken after a disaster with a view to restoring or improving the pre-disaster living conditions of the stricken community, while encouraging and facilitating necessary adjustments to reduce disaster risk".

❏ The principle of '**Build Back Better'** ,one of the pillars of Sendai framework is generally followed to use the disaster as a trigger to create more resilient nations and societies than before.

"*Every* **US$1 invested in making** *infrastructure disaster-resilient saves* **US$4 in reconstruction"** : UNDRR

❏ ICTs can improve both the speed and quality of agency interventions, including post-disaster assessments, recovery planning and monitoring, and project/programme design and implementation

- ❏ ICT tools are then required to rapidly and systematically assess the significance of damages and losses, help define reconstruction strategies, set up a basis on geographical terms and sectors and help define priorities.

- ❏ Maps produced using GIS can visualize patterns, trends and correlations with other features. Also, information from various sources can be superimposed using GIS to identify risks and investment priorities, and to establish baselines for reconstruction.

- ❏ The **DesInventar** system can also be used to simulate disasters and study their impact. For example, it is possible to trigger an earthquake in the virtual environment and analyse its impact on a geographical area ranging from a municipality to a group of countries. The system forecasts information on the possible loss of human lives, impact on the economy and damage to infrastructure.

desinventar — Disaster Information Management System

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